
New Species of *Ardisia* (Myrsinaceae) from the Cordillera Occidental of Colombia and Ecuador

John J. Pipoly III

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. Studies of the vegetation of Parque Nacional Natural "Las Orquídeas" and surrounding areas, located at the junction of Antioquia and Chocó departments, on the western slopes of the Cordillera Occidental, have revealed two new species of *Ardisia* Swartz. These species, *Ardisia mcphersonii* and *A. cardenasii*, are described and illustrated, and their phylogenetic relationships are discussed. Another new species, *A. pluvialis*, from the Chocó Floristic Province of northwestern Ecuador at the foothills of the western slope of the Cordillera Occidental, is also described and illustrated, and a key to distinguish it from its two most closely related congeners is provided.

The Cordillera Occidental of the Andes, and the adjacent Chocó Floristic Province of Colombia and Ecuador, are the home of some of the richest tropical forests on earth (Cuatrecasas, 1958; Forero, 1982, 1988, 1989; Gentry, 1982, 1987). Under the auspices of a grant from the National Geographic Society, the Fundación Jardín Botánico, "Joaquín Antonio Uribe," and the Missouri Botanical Garden are documenting the plant diversity of Parque Nacional Natural "Las Orquídeas," comprising 32,000 hectares on the western slopes of the Cordillera Occidental, along the border of Antioquia and Chocó departments. Determination of specimens from that project, along with other *Ardisia* specimens from the Chocó of Ecuador, has resulted in the discovery of three new species, described herein.

Ardisia mcphersonii Pipoly, sp. nov. TYPE: Colombia. Antioquia: Mcpio. de Frontino, Murri, W-Central part of Antioquia, 15 km from Nutibarra, 6°40'N, 76°20'W, 1,875 m, 3 Nov. 1988 (fl), G. McPherson et al. 12954 (holotype, HUA; isotypes, MO, US). Figure 1.

Propter laminas oblongas vel anguste ellipticas ad apices basesque acuminatas, inflorescentiam terminalam tripinnatipanniculatamque, margines sepalinos hyalinos erosos ciliatosque, antheras lanceoloideas, ovulos numerosos pluriseriatisque *A. gentryi* Lundell valde arcte affinis, sed ab ea inflorescentiae rhachidi recta (non geniculata), trichomatibus stellatis (nec furfuraceo-lepidotis) induta, pedicellis teretibus (nec obconicis), denique laminis desuper

manifeste atro-(non inconspicue pellucido-) punctatis statim distinguitur.

Tree to 6 m tall; branchlets subterete, 5–7 mm diam., densely rufous stellate-tomentose, the tomentum persistent. Leaves chartaceous, the blades oblong to narrowly elliptic, 18–33 cm long, 5.8–8.5 cm wide, apex abruptly acuminate, the acumen 1.2–1.5 cm long, base acute, decurrent on the petiole, costa impressed and sparsely tomentose above, prominently raised and densely stellate tomentose below, secondary veins 30–38 pairs, slightly raised above and below, densely and prominently black punctate and minutely scrobiculate above, fufuraceous lepidote and stellate tomentose below, the margin revolute; petioles canaliculate, 1.2–1.5 cm long, sparsely tomentose above, densely tomentose below, the tomentum persistent. Inflorescence terminal, tripinnately pyramidal-paniculate, 21–30 cm long, 20–30 cm wide, the lower branches subtended by leaves, the rachis and pedicels densely rufous stellate-tomentose, primary and secondary axes straight; inflorescence bract and secondary branch bracts unknown; floral bracts chartaceous, lanceolate, 1–1.4 mm long, 0.3–0.4 mm wide, apex attenuate, densely rufous glandular-papillate above and below, the margin entire, early caducous; pedicels terete, 1.2–1.8 mm long, densely rufous glandular-papillate. Flowers corymbose, 5-merous, cream; calyx chartaceous, the sepals essentially free, chartaceous, ovate, 1.4–1.8 mm long, 1.7–1.9 mm wide, apex rounded to acutish, asymmetric, auriculate on one side, densely and minutely red glandular-papillate without, glabrous within, densely and prominently black punctate, the margin hyaline, erose, ciliate; corolla coriaceous, the petals free, oblong, 4.2–4.4 mm long, 1–1.2 mm wide, apex acuminate, asymmetric, glabrous, densely and prominently black punctate, the margin hyaline, irregular, entire, glabrous; stamens 2.8–3 mm long, the filaments flat, 1–1.2 mm long, inserted at the bases of the petals, basally widened, glabrous, the anthers subversatile, lanceoloid, 2.4–2.6 mm long, 1–1.2 mm wide, apex apiculate, base sagittate, dehiscent by wide longitudinal slits, the connective epunctate; pistil 3.5–3.9 mm long, the ovary subglobose, 1.4–1.6 mm

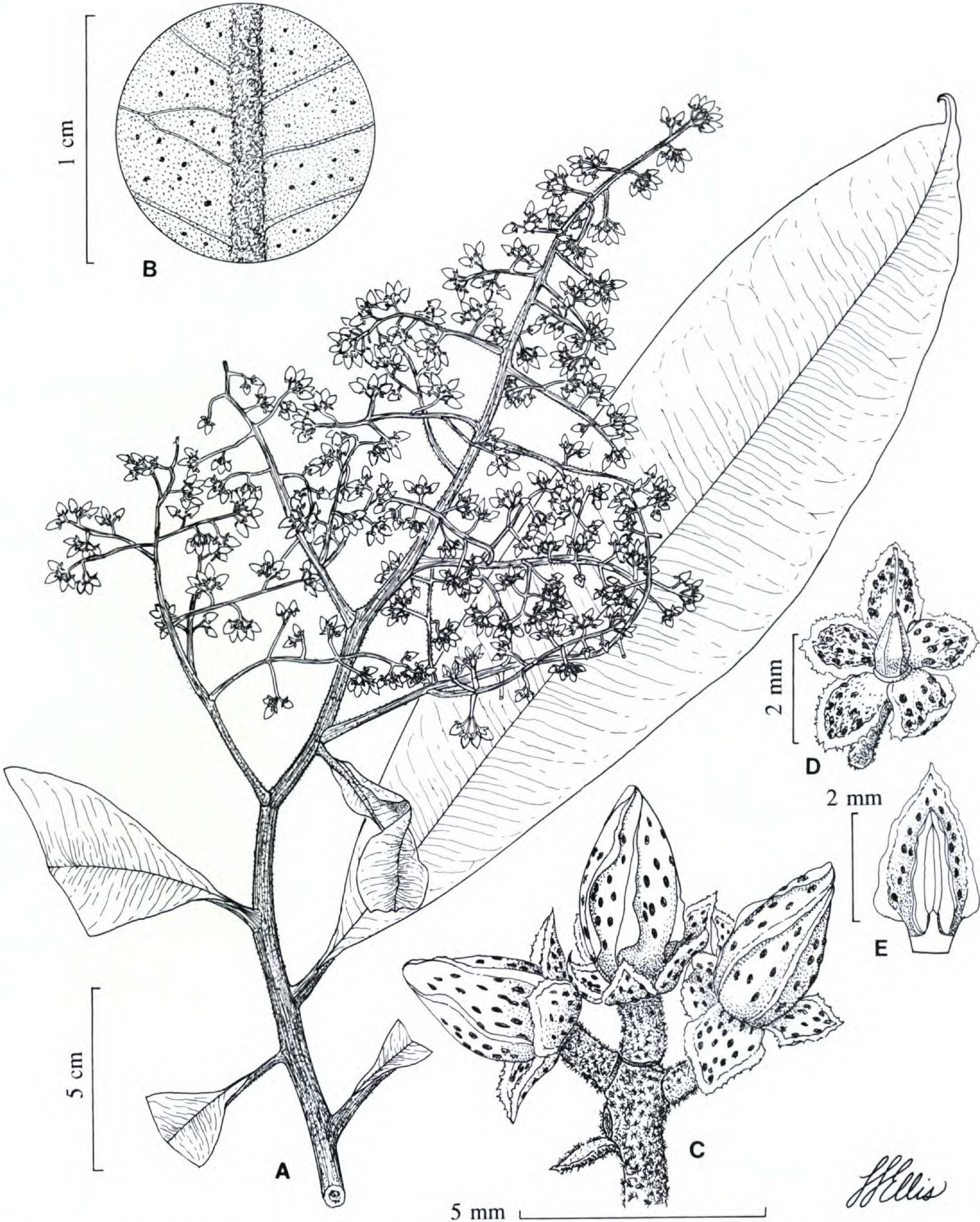


Figure 1. *Ardisia mcphersonii* Pipoly. — A. Flowering branchlet, showing straight inflorescence rachis. — B. Abaxial leaf surface, showing stellate tomentum of costa and furfuraceous lepidote surface of blade, with prominent black punctations. — C. Corymb, showing cylindrical pedicel and perianth punctation. — D. Open calyx and pistil (from bud), showing hyaline, erose, ciliate sepal margins. — E. Petal (from bud), showing asymmetry and punctation. A–E, drawn from the isotype.

long, 1–1.2 mm diam., densely and minutely red punctate, the style 2.1–2.3 mm long, epunctate, the stigma punctiform, the placenta globose, apiculate, the ovules minute, 24–35, pluriseriate. Fruit unknown.

Distribution and ecology. Known only from the type, growing in cloud forest, 1,875 m elevation.

Etymology. This species is dedicated to Gordon McPherson of the Missouri Botanical Garden, colleague and specialist in Madagascan Euphorbiaceae.

Ardisia mcphersonii, by its chartaceous, oblong to narrowly elliptic leaves with acuminate apices and acute bases, the tripinnately pyramidal-paniculate, terminal inflorescences, hyaline, erose and ciliate sepal margins, lanceoloid anthers, and, finally, the numerous, minute, pluriseriate ovules, is closely related to *Ardisia gentryi* Lundell, a species endemic to the Alto del Buey region of the central Colombian Chocó. However, *Ardisia mcphersonii* may be easily recognized by the straight primary inflorescence rachis, stellate tomentum, terete pedicels, and prominently black punctate upper leaf surfaces. Both species belong to the group of *Ardisia* species segregated into *Auriculardisia* Lundell (1981), defined by the furfuraceous lepidote scales, auriculate sepals, and minute, numerous ovules. However, because these features of *Auriculardisia* have now been found in Malesian *Ardisia*, subgenera *Acrardisia* Mez and *Tinopsis* Mez (Stone, 1989), use of these characters to segregate genera is precluded. Therefore, I am not recognizing the group as a separate genus, pending further studies.

Ardisia cardenasii Pipoly, sp. nov. TYPE: Colombia. Antioquia: Parque Nacional Natural “Las Orquídeas,” Mpio. Urrao, left bank of Río Venados, 6°34'N, 76°19'W, 1,110–1,240 m, 27 July 1988 (fl, fr), *A. Cogollo et al.* 3522 (holotype, JAUM, No. 17907; isotypes, COL, FMB, JAUM, No. 17908, MO, NY, US). Figure 2.

Ob ramulos flexuosos, laminas desuper glabras atropunctatas secus margines planas, inflorescentiam rhachidi aliquantum flexuosa, flores corymbosos, pedicelos cylindricos sepala petalaeque symmetrica, petala ad bases connata, antheras concoloras ad apices rotundatis vel truncatis primum poris apicalibus deinde rimis longitudinalibus deshiscentibus *A. standleyanae* P. H. Allen valde affinis, sed ab ea laminis membranaceis (non chartaceis) lanceolatis (nec ellipticis vel oblongis necque obovatis), desuper scrobiculatis (nec laevibus), ad bases rotundatis (nec acutis), petiolis canaliculatis (non marginatis), necnon petalis 5.5–6.3 (non 4.8–5.2) mm longis, connatis 1.2–1.4 (nec 0.5) mm longis, oblongis (nec ellipticis), secus margines hyalinis erosisque denique glabris (nec opacis integerrimis

translucido-lepidotisque) denique filamentis glabris (non papillosis) praeclare distat.

Tree to 14 m tall, 15 cm DBH; branchlets terete, somewhat flexuous, 2–3 mm diam., the apical buds densely appressed ferrugineous furfuraceous-lepidote, glabrescent. Leaves membranaceous, the blades lanceolate, (6.7–)10.5–14.5 cm long, (2.8–)3.5–5.7 cm wide, apex long-acuminate, the acumen 1–2 cm long, base rounded, not decurrent on the petiole, costa slightly raised above, prominently raised below, secondary veins 20–35 pairs, slightly raised above and below, glabrous and somewhat nitid above, pallid, densely and prominently black punctate and sparsely furfuraceous lepidote below, glabrescent, the margin slightly irregular, flat, entire, glabrous; petiole canaliculate, 0.3–0.5(–0.7) cm long, glabrous above, sparsely furfuraceous-lepidote below, glabrescent. Inflorescence terminal, bipinnately pyramidal-paniculate, (6.5–)9.5–15 cm long, 6.5–10.5 cm wide at base, the rachis slightly flexuous, glabrous; inflorescence bract unknown; floral bracts membranaceous, ovate, 0.3–0.5 mm long, 0.2–0.3 mm wide, apex obtuse, hyaline, conspicuously black punctate, early caducous, the margin entire, hyaline, glabrous; pedicels cylindrical, 3–7 mm long, conspicuously red punctate, glabrous. Flowers corymbose, 5–6-merous, white; sepals free, chartaceous, ovate, 2–2.8 mm long, 1–1.2 mm wide, apex truncate to premorse, densely and prominently red punctate, the margin hyaline, erose, glabrous; corolla membranaceous, (5.5–)5.8–6.3 mm long, the tube barely developed, 1.2–1.4 mm long, the lobes oblong, 4.4–4.9 mm long, 2.4–2.6 mm wide, apex truncate to widely rounded, prominently black punctate and brown punctate-lineate, glabrous, the margin minutely crenulate, glabrous; stamens 4.6–5 mm long, the filaments free, flat, 2.8–3.2 mm long, basally expanded, inserted at petal base, glabrous, epunctate, the anthers basifixed, lanceoloid, 2.1–2.5 mm long, 0.7–0.9 mm wide, apex truncate, base deeply cordate, concolorous, dehiscent by subterminal pores, then opening by narrow longitudinal slits, the connective epunctate; pistil 6–6.5 mm long in anthesis, the ovary conical, 1.2–1.4 mm long and in diam., the style 4.8–5.1 mm long, the stigma punctiform, the placenta globose, apiculate, the ovules 22–32, pluriseriate. Fruit globose, 5–7 mm long and in diam., exocarp thin, densely and prominently black punctate.

Distribution and ecology. *Ardisia cardenasii* is known only from premontane rainforests of the western slopes of the Cordillera Occidental of Colombia, in the general area of Urrao, Antioquia, at 1,110–1,400 m elevation.

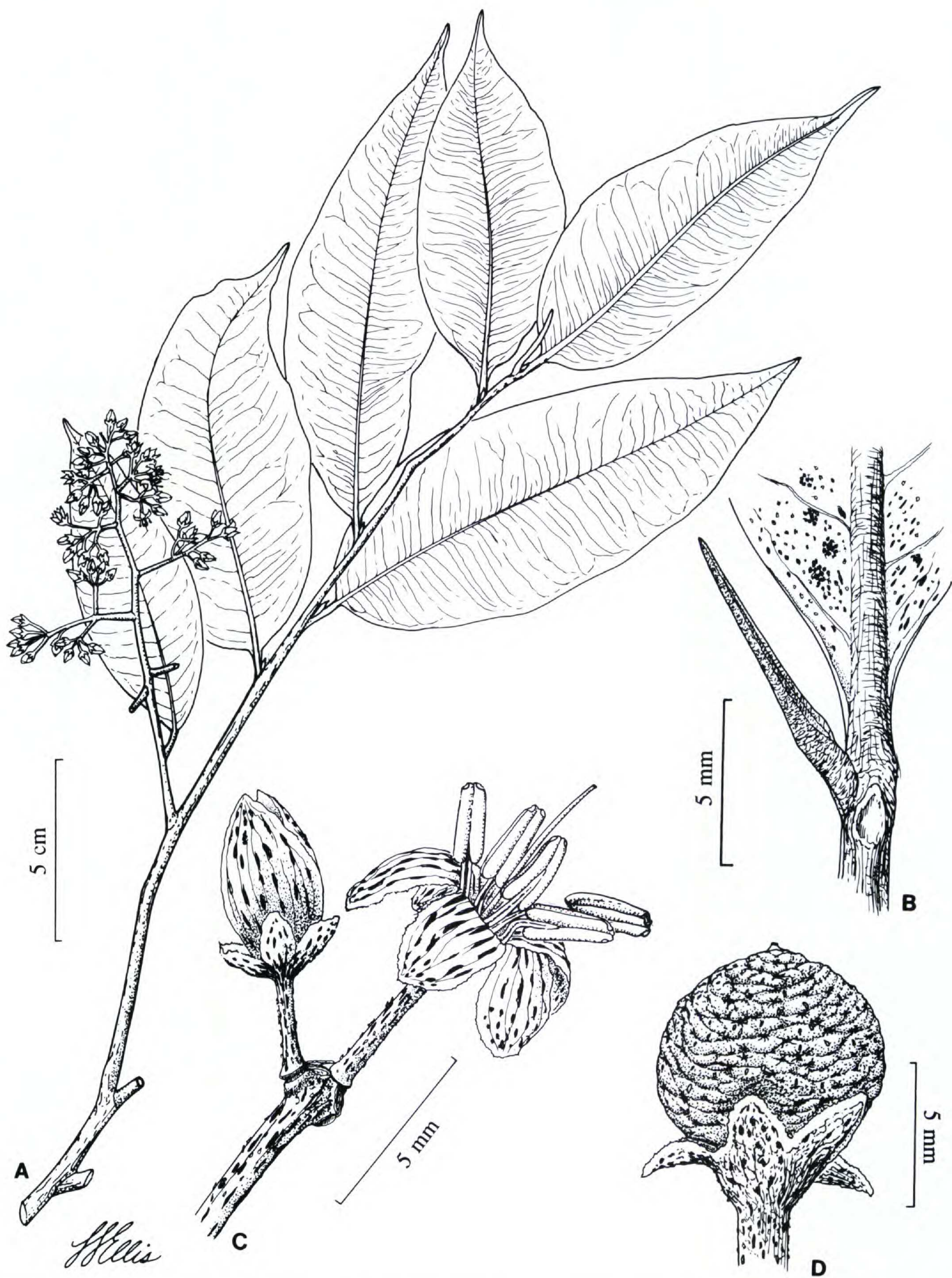


Figure 2. *Ardisia cardenasii* Pipoly. —A. Flowering branchlet, showing corymbose flowers of tripinnate panicle. —B. Abaxial leaf surface and branchlet, showing furfuraceous lepidote vestiture. —C. Corymb, showing cylindrical pedicels, and poricidally dehiscent anthers with truncate apices. —D. Fruit and calyx, showing hyaline, erose, glabrous margins. A–D, drawn from the holotype.

Etymology. This species is named in honor of Dayron Cárdenas López, curator of the herbarium at the Fundación Jardín Botánico, "Joaquín Antonio Uribe" (JAUM), Medellín, Colombia. Through his numerous collections, and their copious field data, our knowledge of the flora from the Cordillera Occidental (Antioquia and Chocó) has been greatly improved.

Common name. "Guayabillo."

Paratypes. COLOMBIA. **Antioquia:** Parque Nacional Natural "Las Orquídeas," Mpio. Urrao, Camino de Venados toward Carauta, right bank of río Venados, 1,400 m, 06°33'N, 76°17'W, 15 Feb. 1989 (fl), *A. Cogollo et al.* 4010 (COL, FMB, JAUM, MO, NY, US).

Ardisia cardenasii, by its somewhat flexuous branchlets, adaxially glabrous, black punctate leaves with entire, flat margins, inflorescences with somewhat flexuous primary rachis, flowers in corymbs, cylindrical pedicels, symmetric petals and sepals, petals basally short-connate, and finally, concolorous anthers dehiscent first by pores, then by longitudinal slits, is closely related to *Ardisia standleyana* P. H. Allen, which is a highly variable species occurring from Honduras to Venezuela. The membranaceous, lanceolate, scrobiculate leaf blades with rounded bases and canaliculate petioles, concomitant with the longer, oblong, apically premorse to truncate, more connate petals with hyaline, erose and glabrous margins, clearly separate *A. cardenasii* from *A. standleyi*.

Ardisia pluvialis Pipoly, sp. nov. TYPE: Ecuador. Esmeraldas: streambed, near Río Palaví, Awá encampment, 01°07'N, 78°37'W, 150–350 m, 10 Feb. 1988 (fl), *W. Hoover et al.* 3747 (holotype, MO; isotypes, QCA, QCNE). Figure 3.

Species haec ob petiolos 5–9 mm longos, sepala anguste triangulares, 2–2.3 mm longa, necnon ad apices attenuatos *A. lorentensis* valde affinis sed ab ea laminis 1.8–3 (non 3.5–6.5) cm latis, ad apices longi-attenuato-(nec abrupte-) acuminatis, acumine 1.5–2 (non 0.6–1) cm longo, inflorescentiis erectis (non pendulis) cum rhachidibus flexuosis vel geniculatis (nec rectis), pedicellis 4.9–5.5 (non 6–10) mm longis, denique fructibus verrucosis (non costatis) facile cognoscitur.

Shrub to tree to 2 m tall; branchlets terete, thin, 2–2.5 mm diam., densely rufous furfuraceous-lepidote, persistent. Leaves alternate, membranaceous, the blades narrowly elliptic to narrowly oblanceolate, (5.5–)8–10(–12) cm long, (1.8–)2–3 cm wide, apex long-acuminate, the acumens 1.5–2 cm, the base cuneate, decurrent on the petiole, glabrous, costa canaliculate, glabrous and epunctate above, prom-

inently raised, densely furfuraceous-lepidote and black punctate-lineate below; smooth, somewhat nitid and sparsely black punctate above, furfuraceous-lepidote, densely and prominently black punctate below, the margin roughly serrate, flat, glabrous; petioles deeply canaliculate, 0.5–0.9 mm long, glabrous above, densely furfuraceous-lepidote below, persistent. Inflorescence terminal, columnar, pinnately paniculate, 7–11 cm long, 4.5–6 cm wide, the rachis flexuous to geniculate; peduncle 1–1.2 cm long; inflorescence bract foliaceous, with same form as leaves, but 4–6 cm long, 1.5–1.7 cm wide; inflorescence branch bracts similar to inflorescence bract, but progressively smaller acropetally; second-order branch bracts membranaceous, linear, progressively smaller acropetally, 1.8–2.2 mm long, ca. 0.3 mm wide, apex attenuate, densely and prominently black punctate and punctate-lineate, densely furfuraceous-lepidote, the margin entire, densely lepidote; floral bracts chartaceous, linear-lanceolate, 0.7–1.1 mm long, 0.2–0.4 mm wide, apex acute, the margin hyaline, erose and glandular-ciliate; pedicel cylindrical, 4.9–5.5 mm long, 0.5 mm diam, densely and prominently black punctate and furfuraceous-lepidote. Flowers corymbose, 5-merous; white; sepals free, chartaceous, narrowly triangular, 2.1–2.3 mm long, 0.7–0.9 mm wide, apex attenuate, densely and prominently black punctate and punctate-lineate, the margin hyaline, regular, erose apically, long glandular-ciliate; corolla membranaceous, 3.8–4.2 mm long, the petals short-connate, the tube 1.2–1.4 mm long, the lobes oblong, 2.4–2.6 mm long, 1.1–1.4 mm wide, apex acuminate, asymmetric, hyaline, sparsely and prominently black punctate-lineate medially, glabrous, the margin hyaline, entire, glabrous; stamens 3.1–3.5 mm long; the filaments flat, 2.1–2.3 mm long, inserted at petal base, expanded basally, glabrous, epunctate, the anthers lanceolate, basifixed, 1.4–1.8 mm long, 0.5–0.7 mm wide, apex cuspidate, base sagittate, dehiscent by subterminal pores, then by wide longitudinal slits, the connective darkened dorsally, glabrous; pistil obturbinate, 4.4–4.6 mm long in anthesis, the ovary subglobose, 1–1.2 mm long, 0.8–1 mm diam., verrucose, densely and prominently red punctate, the style 3.5–3.8 mm long, epunctate, the stigma punctiform, the placenta globose, apiculate, the ovules 4–6, pluriseriate. Fruit globose, 3–5 mm long and diam., exocarp thin, densely and prominently black punctate.

Distribution and ecology. *Ardisia pluvialis* is endemic to pluvial forests along the río Palaví, of northwesternmost Ecuador, a part of the Chocó Floristic Province (Gentry, 1982), at 150–250 m el-

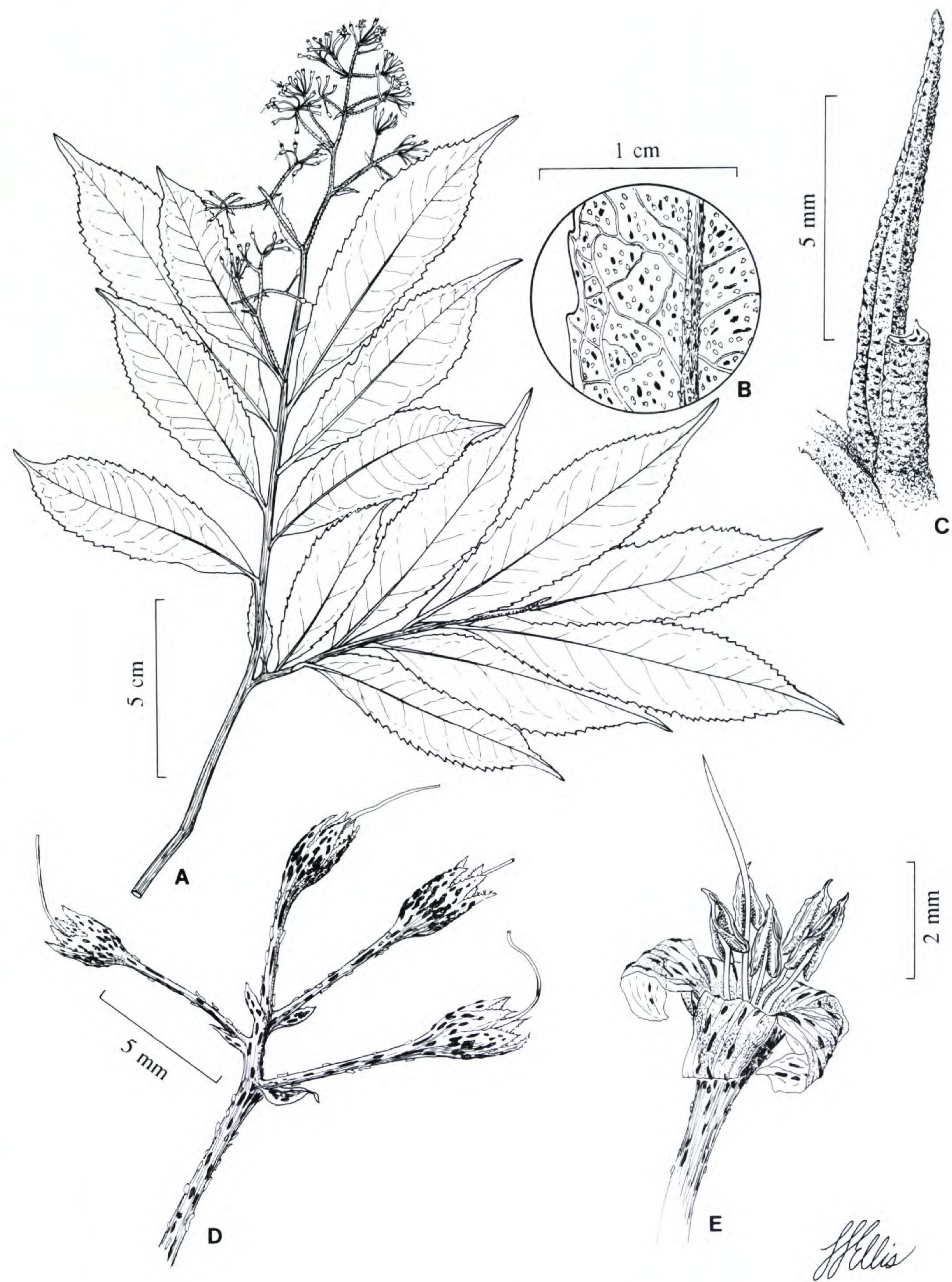


Figure 3. *Ardisia pluvialis* Pipoly. — A. Flowering branchlet, showing scaly inflorescence rachis tomentum and corymbose flowers. — B. Abaxial leaf surface, showing furfuraceous lepidote scales, prominent punctations and roughly serrate margin. — C. Terminal bud, showing furfuraceous lepidote indumentum. — D. Corymb, showing large scales, prominently raised punctations and sepals with erose margins apically. — E. Flower at anthesis, showing cuspidate anthers. A–E, drawn from the holotype.

elevation. It grows as a small shrub between rocks at river edges.

Etymology. The specific epithet "pluvialis" refers to rain and by inference suggests the rainforests below the Andean cordillera in which the species occurs.

Paratypes. ECUADOR. **Esmeraldas:** streambed, near Río Palaví, Awá encampment, 0°58'N, 78°16'W, 200 m, 10 Feb. 1988 (fr), *W. Hoover et al.* 3105 (MO, QCA); creek on left bank of río Palaví, going upriver, 2 bends from Awá encampment, 01°07'N, 78°37'W, 225 m, 13 Feb. 1988 (fr), *W. Hoover et al.* 3188 (QCA, MO); Río Palaví near Awá encampment, 150–200 m, 9 Feb. 1988 (fl), *W. Hoover et al.* 3805 (QCA, MO); down Río Palaví 1 km from Awá camp, 150–250 m, 12 Feb. 1988 (fl), *W. Hoover et al.* 4119 (QCA, MO).

Ardisia pluvialis, its sister species, *A. novitensis* Lundell, and *A. loretensis* Lundell are very closely related. They share such characters as the membranaceous leaves with dentate or serrate margins, the short petioles, terminal panicles with slender rachises and pedicels, furfuraceous indument of stalked scales on the branchlets, inflorescence rachises and abaxial leaf surfaces, and the hyaline-marginate sepals. *Ardisia novitensis* was thought to be endemic to southern Chocó, but it has now been discovered recently at Murri (Antioquia), adjoining the Parque Nacional "Las Orquídeas" (*Calcejas et al.* 6741). *Ardisia loretensis*, previously known from Amazonas and Loreto, Peru, has now been collected from Napo, Ecuador, in the Yasuní National Park and the Jatún Sacha Biological Station (*Cerón* 3612, 3948).

These three closely related species may be separated using the following key:

- 1a. Petioles 5–9 mm long; sepals narrowly triangular, 2–2.3 mm long, apex attenuate; plants of lowland forests, less than 500 m elevation.
 - 2a. Leaf blades (1.8–)2–3 cm wide, apex long acuminate-attenuate, the acumen 1.5–2 cm long, the margin serrate; inflorescence erect, the rachis flexuous to geniculate; pedicels 4.9–5.5 mm long; fruit verruculose; lowland riparian forest of NW Ecuador, below W slopes of Western Andean Cordillera, 100 to 250 m elevation *A. pluvialis*
 - 2b. Leaf blades 3.5–6.5 cm wide, apex abruptly acuminate, the acumen 0.6–1 cm long, the margin dentate; inflorescence pendent, the rachis straight; pedicels 6–10 mm long; fruit longitudinally costate; Amazonian Peru and Ecuador, 100–450 m elevation *A. loretensis*

- 1b. Petioles 3–5 mm long; sepals ovate-triangular, 1–1.2 mm long, apex acute; premontane forests of Chocó Floristic Province, 500–900 m elevation *A. novitensis*

Both *Ardisia loretensis* and *A. novitensis* were transferred to *Icacorea* Aublet by Lundell (1981) because of the furfuraceous lepidote indumentum of the branchlets and linear or lanceolate, concolorous, and poricidally dehiscent anthers. However, because there is no unique feature that defines *Icacorea*, I choose to recognize it as an infrageneric group rather than a distinct genus, pending further study.

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